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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/885,223	06/20/2001	David Ofelt	1014-003US01	4414

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SHUMAKER & SIEFFERT, P. A.
1625 RADIO DRIVE
SUITE 300
WOODBURY, MN 55125

EXAMINER
SHINGLES, KRISTIE D

ART UNIT	PAPER NUMBER
2141	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

	Application No.	Applicant(s)
Office Action Summary	09/885,223	OFELT ET AL.
	Examiner	Art Unit
	Kristie Shingles	2141

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>08 January 2007</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-43 and 50-53</u> is/are pending in the application.

　　4a) Of the above claim(s) <u>44-49</u> is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-43 and 50-53</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All　b)☐ Some *　c)☐ None of:

　　　1.☐ Certified copies of the priority documents have been received.

　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
　　Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Response to Amendments
No claims have been amended.
Claims 44-49 are withdrawn.

Claims 1-43 and 50-53 are pending.

Response to Arguments

I.   Applicant's arguments, see Remarks pages 4-6, filed 1/8/2007, with respect to the

rejection of claims 1-43 and 50-53 under 35 U.S.C. 103(a) have been fully considered and are

persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration,

a new ground(s) of rejection is made in view of *Bender* (US 6,747,964) in view of *Hui et al* (US

6,198,749).

Claim Rejections - 35 USC § 103

II.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.
>
> This application currently names joint inventors. In considering patentability of the claims under 35
> U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the
> time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the
> obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly

owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

III. **Claims 1-25 and 50-52,** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Bender* (US 6,747,964) in view of *Hui et al* (US 6,198,749).

a. **Per claims 1, 7 and 12,** *Bender* teaches a method comprising:

- receiving a set of fragments at a network device from a plurality of links in one or more interface cards according to a multi-link protocol that allows multiple physical links to be treated by the network device as a single logical link, the set of fragments collectively comprising an unsequenced data packet (*Abstract, col.1 lines 50-62, col.3 lines 65-col.4 line 3, col.4 lines 9-10 and 43-61, col.5 lines 13-27 and 54-65, col.6 lines 60-62, col.8 line 57-col.9 line 2—ML-PPP processor of the mobile unit receives fragments from conductors and modems and aggregates the fragments into an ML-PPP bundle*);

- performing a first routing operation in the network device in accordance with routing information to send the fragments to a multi-link service card of the network device for sequencing, wherein the routing information identifies the multi-link service card as a destination for the data packets and wherein the multi-link service card of the network device facilitates support of the multi-link protocol by the network device (*Figures 5-6, col.4 lines 31-37, col.5 lines 13-27, col.7 lines 1-55—provision for ML-PPP header and sequence number in multi-link fragment format, wherein each ML-PPP fragment is a beginning and a termination packet*); and

- performing a second routing operating in the network device in accordance with routing information to send the sequenced fragments as a sequenced data packet to the one or more interface cards of the network device for communication to a destination device over a computer network (*col.4 line 49-col.5 line 4, col.6 lines 60-62, col.7 lines 29-34 and 49-52—ML-PPP processor separates and reconstructs the fragments into data streams and sent to the modems*)

Hui et al further teaches the realization of implementing the PPP multilink protocol within a network device, such as a router, by virtue of an inverse multiplexer microprocessor using the multilink protocol capable of fragmenting, recombining, reordering and sequencing the transmission and reception of data on multiple channels, wherein the inverse

multiplexer microprocessor interfaces with modem chips also on the network device (*Figures 2-3 and 7-8, col.4 line 58-col.5 line 15, col.6 lines 2-19, col.8 lines 13-43*).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of *Bender* with *Hui et al* for the purpose of implementing the multilink protocol in network devices in order to enable the transmission and reception of data at high-speeds by aggregating multiple independent data streams into a single bundle in order to create a single higher rate data channel across the network.

b.   **Claims 19, 29, 32 and 34** contain limitations that are substantially similar to claims 1, 7 and 12 and are therefore rejected under the same basis.

c.   **Per claim 50,** *Bender* teaches a method comprising:

- receiving data packets in one or more interface cards of a network device (*Abstract, col.1 lines 50-62, col.3 lines 65-col.4 line 3, col.4 lines 9-10 and 43-61, col.5 lines 13-27 and 54-65, col.6 lines 60-62—ML-PPP processor of the mobile unit receives fragments from conductors and modems and aggregates the fragments into an ML-PPP bundle*);

- performing a first routing operation in accordance with routing information to send the data packets to a service card of the network device for prioritization (*Figures 5-6, col.4 lines 31-37, col.5 lines 13-27, col.7 lines 1-55—provision for ML-PPP header and sequence number prioritization in multi-link fragment format, wherein each ML-PPP fragment is a beginning and a termination packet*); and

- performing a second routing operation in accordance with the routing information to send the prioritized data packets to the interface cards of the network device for communication to a destination device over a computer network (*col.4 line 49-col.5 line 4, col.6 lines 60-62, col.7 lines 29-34 and 49-52—ML-PPP processor separates and reconstructs the fragments into data streams and sent to the modems for transmission over the network*).

Hui et al further teaches the realization of implementing the PPP multilink protocol within a network device, such as a router, by virtue of an inverse multiplexer

microprocessor using the multilink protocol capable of fragmenting, recombining, reordering and

sequencing the transmission and reception of data on multiple channels, wherein the inverse

multiplexer microprocessor interfaces with modem chips also on the network device (*Figures 2-*

3 and 7-8, col.4 line 58-col.5 line 15, col.6 lines 2-19, col.8 lines 13-43).

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to combine the teachings of *Bender* with *Hui et al* for the purpose of

implementing the multilink protocol in network devices in order to enable the transmission and

reception of data at high-speeds by aggregating multiple independent data streams into a single

bundle while reordering and sequencing the data streams for prioritizing the appropriate data

according to the corresponding data rates and sequence numbers.

d.   **Per claim 2,** *Bender* with *Hui et al* teach the method of claim 1, wherein the

multi-link service card is not directly coupled to any of the links (*Bender: Abstract; Hui et al:*

Figures 3-4).

e.   **Claims 8 and 16** are substantially similar to claim 2 and are therefore rejected

under the same basis.

f.   **Per claim 3,** *Bender* with *Hui et al* teach the method of claim 1, wherein the

multi-link service card is integrated with one of the interface cards (*Hui et al: Figures 3-4, col.7*

line 61-col.8 line 43; Bender: col.8 line 57-col.9 line 2).

g.   **Claim 9** is substantially similar to claim 3 and is therefore rejected under the

same basis.

h.   **Per claim 4,** *Bender* with *Hui et al* teach the method of claim 1, further comprising: sending the data packets from one or more interface cards to the destination device over multiple links according to the multi-link protocol (*Bender: col.4 line 49-col.5 line 4, col.6 lines 60-62, col.7 lines 29-34 and 49-52; Hui et al: col.4 lines 58-62, col.8 lines 13-43 ;*).

i.   **Claims 10 and 17** are substantially similar to claim 4 and are therefore rejected under the same basis.

j.   **Per claim 5,** *Bender* with *Hui et al* teach the method of claim 4, further comprising, prior to sending the sequenced data packets to the one or more interface cards: sending the data packets to the multi-link service card for fragmentation (*Bender: col.4 lines 31-35 and 62-65, col.5 lines 16-19, col.7 lines 53-56; Hui et al: col.4 lines 59-62*).

k.   **Claim 11** is substantially similar to claim 5 and is therefore rejected under the same basis.

l.   **Per claim 6,** *Bender* with *Hui et al* teach the method of claim 1, further comprising: prioritizing the sequenced data packets to provide quality of service prior to sending the sequenced data packets to the interface cards (*Bender: col.5 lines 19-27, col.7 lines 29-59*).

m.   **Claims 18 and 42** are substantially similar to claim 6 and are therefore rejected under the same basis.

n.   **Per claim 13,** *Bender* with *Hui et al* teach the method of claim 12, wherein the data blocks are fragments, the method further comprising building a packet from the fragments in the first multi-link service card (*Bender: col.4 lines 48-63, col.6 lines 60-62, col.7 lines 10-52*).

o.   **Claim 41** is substantially similar to claim 13 and is therefore rejected under the same basis.

p.   **Per claim 14,** *Bender* with *Hui et al* teach the method of claim 13, further comprising fragmenting the packet in the first multi-link service card (*Bender: col.4 lines 26-37 and 62-64; Hui et al: col.4 lines 59-62*).

q.   **Per claim 15,** *Bender* with *Hui et al* teach the method of claim 14, further comprising sending the fragmented packet to a destination device over a computer network (*Bender: col.4 line 49-col.5 line 4, col.6 lines 60-62, col.7 lines 29-34 and 49-52; Hui et al: col.8 lines 13-43*).

r.   **Claims 20-22** are substantially similar to claim 15 and are therefore rejected under the same basis.

s.   **Per claim 23,** *Bender* with *Hui et al* teach the router of claim 22, wherein the routing engine includes a routing table (*Hui et al: col.8 lines 13-43---routing tables are inherent to routers*).

t.   **Claim 51** is substantially similar to claim 23 and is therefore rejected the same basis.

u.   **Per claim 24,** *Bender* with *Hui et al* teach the router of claim 19, wherein the data

blocks are data packets *(Bender: col.4 lines 49-61).*

v.   **Claims 25, 30, 31 and 33** are substantially similar to claim 24 and are therefore

rejected under the same basis.

w.   **Per claim 28,** *Bender* with *Hui et al* teach the router of claim 19, wherein the

routing control unit forwards sequenced data packets to the multi-link service card for

fragmentation according to the multi-link protocol prior to selection one of the interface cards to

forward the sequenced data blocks over the computer network, and wherein fragments of the

sequenced data blocks are sent over the computer network via the interface card following the

fragmentation according to the multi-link protocol *(Bender: Abstract, col.1 lines 50-62, col.3*

lines 65-col.4 line 3, col.4 lines 9-10 and 43-61, col.5 lines 13-27 and 54-65, col.6 lines 60-62,

col.8 line 57-col.9 line 2; Hui et al: Figures 2-3 and 7-8, col.4 line 58-col.5 line 15, col.6 lines 2-

19, col.8 lines 13-43).

x.   **Per claim 35,** *Bender* with *Hui et al* teach the multi-link service card of claim 34,

teach the multi-link service card further comprising: a memory logic unit coupled to the input

logic unit and the output logic unit for storing at least part of the data blocks during sequencing

(Bender: col.5 lines 54-65, col.7 line 62-col.8 line 9, col.8 line 57-col.9 line 2).

y.   **Per claim 36,** *Bender* with *Hui et al* teach the multi-link service card of claim 34,

wherein the output unit fragments sequenced data blocks *(Bender: col.4 lines 26-37, col.7 lines*

29-51).

z.   **Per claim 37,** *Bender* with *Hui et al* teach the multi-link service card of claim 34, wherein the input logic unit includes an input buffer, an unprocessed buffer and a parser (*Bender: col.5 lines 54-65, col.7 line 62-col.8 line 9, col.8 line 57-col.9 line 2; Hui et al: col.7 line 60-col.8 line 43*).

aa.   **Per claim 38,** *Bender* with *Hui et al* teach the multi-link service card of claim 34, wherein the output logic unit includes an output buffer, a processed buffer and a fragmenter-assembler module (*Bender: col.5 lines 54-65, col.7 line 62-col.8 line 9, col.8 line 57-col.9 line 2; Hui et al: col.7 line 60-col.8 line 43*).

bb.   **Per claim 39,** *Bender* with *Hui et al* teach the multi-link service card of claim 35, wherein the memory logic unit includes a memory device, a data memory control, and a data state logic (*Bender: col.5 lines 54-65, col.7 line 62-col.8 line 9, col.8 line 57-col.9 line 2*).

cc.   **Per claim 40,** *Bender* with *Hui et al* teach the multi-link service card of claim 34, wherein the sequencer unit includes a reorder module (*Hui et al: col.4 lines 58-67*).

dd.   **Claim 43** is substantially similar to claim 35 and 39-41 and is therefore rejected under the same basis.

ee.   **Claim 52** is substantially similar to claims 24 and 6 and is therefore rejected under the same basis.

V.   Claims 26, 27 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Bender* (US 6,747,964) in view of *Hui et al* (US 6,198,749) in further view of *Aukia et al* (US 6,594,268).

ff.   **Per claim 26,** *Bender* with *Hui et al* teach the router of claim 19, as applied above. *Hui et al* further teaches implementing the multilink protocol inverse multiplexer within a router (*col.8 lines 13-43*), yet fails to explicitly teach the router further comprising a plurality of interface cards. However, *Aukia et al* teach a router that includes a plurality of interface cards, wherein each one of the plurality of interface cards adapted to interface with a corresponding link of the pack network (*col.28 lines 50-55, col.29 lines 1-19*). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of *Bender* and *Hui et al* with *Aukia et al* in order to provision implementing a router with inverse multiplexer capabilities for executing the multilink protocol via a plurality of interface/line cards or modules within the router for communicating across multiple channels within the network.

gg.   **Claims 27 and 53** substantially similar to claim 26 and is therefore rejected under the same basis.

Conclusion

VI.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Hong et al (6,563,821), Sindhu et al (7,102,999), Choe (7,031,320), Brandt et al (7,065,038), Kay et al (5,703,881).
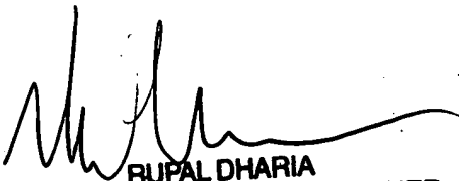
VII.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kristie Shingles whose telephone number is 571-272-3888. The examiner can normally be reached on Monday-Friday 8:30-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rupal Dharia can be reached on 571-272-3880. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kristie Shingles
Examiner
Art Unit 2141

kds

RUPAL DHARIA
SUPERVISORY PATENT EXAMINER